PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the **PATENT APPLICATION** of:			
	Stephen G. Dick et al.		
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For: POWER CONTROL FOR COMMUNICATIONS SYSTEMS UTILIZING HIGH SPEED SHARED CHANNELS		Date:	July 2, 2010
Group:	2618		
Examiner:	Fayyaz Alam		

APPEAL BRIEF

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P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

JURISDICTIONAL STATEMENT

This Brief is submitted pursuant to 37 C.F.R. 41.37 in furtherance to the Notice of Appeal filed on March 24, 2010 following the Panel Decision from Pre-Appeal Brief Review dated May 18, 2010, and is submitted with the requisite official fees and extension petition.

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35 U.S.C. 103(a)..7, 21

I. Real Party in Interest

The real part in interest is the assignee of record, InterDigital Technology Corporation.

II. Related Appeals and Interferences

There are no appeals or interferences related to this patent application.

III. Status of Claims

Claims 39-44 are pending in this application and are the subject of this appeal. Claims 39-44 currently stand rejected based on a December 24, 2009 Final Office Action and are reproduced in the attached Claims Appendix.

IV. Status of Amendments

The last claim amendment was directed to non-substantive issues, was made in a Reply After Final dated February 24, 2010, and was entered as reflected in an Advisory Action dated March 5, 2010.

V. Summary of Claimed Subject Matter

The present application contains two independent claims directed to facilitating power control for wireless communications, in particular power control

for a dedicated channel (DCH) and an associated shared channel (SCH). A concise summary of independent apparatus claim 39 and independent method claim 42, with reference to support in the specification and the example illustrated in the drawings, is provided below. Pending claims 40-41 and 43-44 depend from independent claims 39 and 42, respectively.

Claim 39 is directed to a serving wireless transmit receive unit (WTRU) configured to implement transmission power control for other WTRUs. Fig. 4 illustrates an example of the claimed serving WTRU 30 in communication with another WTRU 10 to which it sends respective control signals to control the transmission power of WTRU 10 with respect to both uplink dedicated channel (UL DCH) signal 12d and associated uplink shared channel (UL SCH) signal 12s. See pars. [0066]-[0075] for further support and a full description.

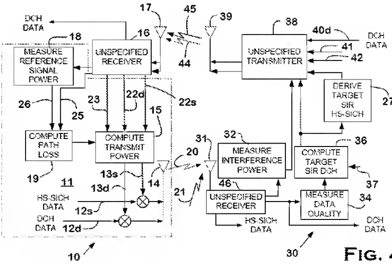

FIG. 4

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Claim 39 requires "a receiver configured to receive UL user data from another WTRU on an UL DCH and at least one UL SCH" (as illustrated, for example, by receiving components 31, 46 of Fig. 4) and "a processor configured to compute UL DCH target metrics based on the received UL user data on the UL DCH" (as illustrated, for example, by processor components 34 and 36 of Fig 4). See pars. [0066]-[0073] for a full description.

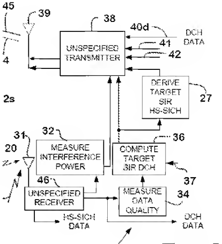

FIG. 4

The target metric processor components 34, 36 have their counterparts <u>for each channel</u> in conventional serving WTRUs. This is illustrated for a single channel/data path ("User Data") in application Fig.2.

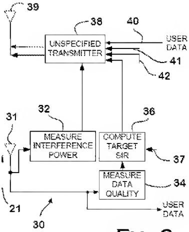

FIG. 2
(PRIOR ART)

Claim 39, however, defines "a shared channel target metric generator configured to output a respective UL SCH target metric derived from each computed UL DCH target metric for use in computing UL channel power adjustments by the other WTRU" (as illustrated, for example, by element 27 in Fig.4). The shared channel target metric generator 27 eliminates the need for target metric processor components 34, 36 in the SCH data

path. Application pars. [0074]-[0075] provide a detailed description of preferred configurations of the shared channel target metric generator 27 illustrated in Fig 4.

Independent Claim 42 is directed to a method corresponding to the functions performed by the claimed serving WTRU elements defined by independent claim 39. In particular, claim 42 requires "generating a respective UL SCH target metric derived from each computed UL DCH target metric for use in computing UL channel power adjustments by the other WTRU." See pars. [0074]-[0075].

VI. Grounds of Rejections to be Reviewed on Appeal

Claims 39-44 stand finally rejected under 35 U.S.C. §103(a) as being unpatentable over PCT Publication WO02/065667 to Willenegger et al. (hereinafter Willenegger) in view of U.S. Patent No. 6,400,960 to Dominique et al. (hereinafter "Dominique") and further in view of U.S. Patent No. 6,711,150 to Vanghi (hereinafter "Vanghi").

Willenegger is cited for the general context of power control by a serving WTRU for dedicated and shared channels, such as base station 104a or 104b, that can facilitate the transmission power control of other WTRUs, such as mobile stations 106a-e, per Willenegger Fig. 1.

Dominique's teaching of using power threshold levels for a primary channel

to establish a power threshold on an associated secondary channel in certain circumstances is understood to be cited for the claimed "generating a respective UL SCH target metric derived from each computed UL DCH target metric."

Vanghi's teaching of using signal to noise ratio (SNR) for determining target metrics from a received signal for power control commands is cited to bolster the teachings of Willenegger and Dominique. It is apparent that the disclosure of Vanghi is reflective of the prior art illustrated in Fig. 2 of the present application.

VII. Argument

A. The Scope and Content of the Prior Art

It is respectfully submitted that application Fig. 2 provides perhaps the best illustration of the pertinent prior art, albeit Fig. 2 illustrates an open-loop power control system for only a single channel/data path. A serving WTRU 30 that facilitates power control in another WTRU 10 is clearly illustrated in application Fig. 2. A receiving component

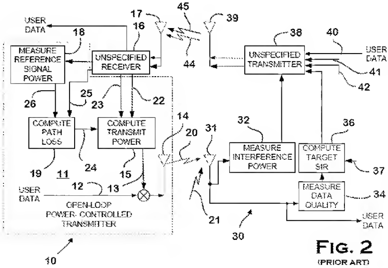

FIG. 2
(PRIOR ART)

31 and processing components 34, 36 in the WTRU 30 that compute target metrics with respect to a single data path ("User Data") are shown. Although multiple data paths are not shown in Fig. 2, it is readily acknowledged that additional data paths for additional channels could be supported in the respective WTRUs 30, 10 by duplicating the various components.

Willenegger is cited for the general context of power control by a serving WTRU for dedicated and shared channels. Willenegger generally discloses power control facilitated by a serving WTRU (base station 104a or 104b) of both an uplink dedicated channel (UL DCH) signal and a related uplink shared channel (UL SCH) signal transmitted from another WTRU (any of user terminals 106a-e). However, Willenegger specifically teaches the use of independent power control loops for each channel. For example, Willenegger page 8, lines 21-24 states:

> ... As shown in FIG. 3, inner loop 310 operates between the user terminal and base station, and one inner loop is typically maintained for each channel to be independently power controlled.

Dominique discloses establishing power thresholds for respective primary and secondary channels, but Dominique does not specify whether the primary channel can be a dedicated channel (DCH) when the related secondary channel is an associated shared channel (SCH) which is the context of the appealed claims.

In Dominique, power thresholds P(k) and S(k) for respective primary and secondary channels are initially computed based on respective power level measurements. Dominique column 6 lines 23-29 states:

> The established power threshold for the primary channel 102 at instant k is P(k). The established power threshold level for the secondary channels at instant k is S(k). P(k) and S(k) **are established from (1) power level measurement information for primary channel 102 and secondary channel connection 120 respectively** received by MSC 116 and (2) an FER deemed acceptable by the service provider.

In Dominique, after an initial secondary power threshold S(k) is established through measuring the secondary channel power (at time k), an attempt to independently calculate an updated new secondary power threshold S(k+1) is made at each subsequent time interval by measuring the second channel power. Dominique column 6 lines 53-58 states:

> Having established the DTX threshold level, the primary channel threshold level and the secondary channel threshold level, MSC 116 now applies the second step of the method of the present invention at the next time instant (k+1) to calculate an updated power threshold level (i.e., S(k+1)) for secondary channel connection 120. Focusing on secondary channel connection 120, MSC 116 determines whether secondary channel connection 120 is in DTX mode at time instant k+1. Secondary channel connections 118 and 122 follow the same procedure for determining whether they are in DTX mode. **The power level of communication signals conveyed over all associated secondary channels is obtained.**

As noted in the above passage, this further attempt to determine an updated new

secondary power threshold S(k+1), involves making a determination whether the secondary channel is in DRX mode based on the secondary channel power level measured at the new time.

If the secondary channel is <u>not</u> determined to be in DRX mode then the updated new secondary power threshold S(k+1) is determined based on the measured secondary channel power level, <u>not the primary channel metric P(k) as later described.</u> Dominique column 7 lines 1-10 states:

> ... If the measured power level of the communication signals of secondary channel connection 120 is above the DTX threshold level or if the measured power level of the communication signals of at least one of the associated secondary channels is above the DTX threshold, then **secondary channel 120 is declared not to be in DTX mode. MSC 116 also establishes the current power threshold level for primary channel 102, i.e., P(k+1), in the same manner as described above for P(k) and S(k).**

When the secondary channel is determined to be in DRX mode, the updated new secondary power threshold S(k+1) is determined based on the primary channel metrics P(k) and P(k+1). Dominique column 7 lines 11-23 states:

> In accordance with the method of the present invention, MSC 116 then calculates an updated power threshold for secondary channel connections 118,120 and 122 based on (1) previously established power threshold (i.e., P(k)) for associated primary channel 102; (2) previously established power threshold (i.e., S(k)) for secondary channel 120 and current established power threshold level (i.e., P(k+1)) for associated primary channel 102. In other words, P(k), S(k)

> and P(k+1) are combined to establish an updated power threshold level, viz., S(k+1, for secondary channel 120. In particular S(k+1)=P(k+1)+S(k)-P(k) thereby tending to prevent **secondary channel 120 (currently in DTX mode)** from entering into a deadlock state. ...

Thus, similar to Willenegger, Dominique teaches individual power control for each channel based on that channels power measurements, except for a special case where it is first determined the secondary channel is in DRX mode based on secondary channel power measurements.

Vanghi is cited for its general teachings about power control stated at column 4, lines 40-56 as follows:

> To perform inner loop power control, the base station measures the energy of the received signal from the mobile station and computes the SNR of the received signal. The base station compares the computed SNR to the target SNR referred to herein as the power control set point. The base station transmits power control commands to the mobile station that signal the mobile station to either increase or decrease its transmit power level based on the comparison, and the mobile station adjusts its transmit power accordingly. The power control commands typically comprise power control bits. The polarity of the power control bits indicates either an `up` or `down` command to the mobile station. Thus, if the received energy falls below the signal to noise threshold, the base station transmits an `up` command, otherwise, it transmits a `down` command. The mobile station, upon receiving the power control bits, adjusts its reverse control channel transmit power accordingly.

This teaching tracks the teaching in the present application with respect to prior art

Fig. 2, where Vanghi's reference to a base station is directed to serving WTRU 30 and Vanghi's reference to a mobile station is directed to other WTRU 10.

Vanghi is directed to the single data path scenario illustrated in application Fig. 2. As reflected in Fig. 2, the data channel signal 12 is transmitted from the other WTRU 10 as signal 20 that is received by serving WTRU 30. Measurements are made of the received data channel signal via serving WTRU's component 34, a target metric is computed via serving WTRU's component 36, which in turn is used to determine a power control signal that is transmitted via serving WTRU's transmitter 38 to the other WTRU 10.

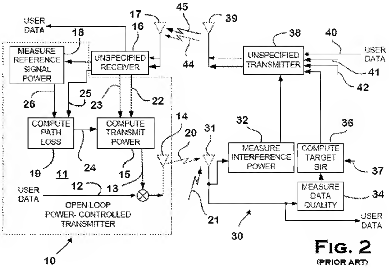

FIG. 2
(PRIOR ART)

B. The Differences Between the Prior Art and the Claimed Invention

The independent claims are directed to facilitating power control for a dedicated channel (DCH) and an associated sporadically received shared channel (SCH). Independent Claim 39 defines a serving wireless transmit receive unit (WTRU) configured to implement transmission power control for another WTRU

that transmits an uplink dedicated channel (UL DCH) and an associated uplink shared channel (UL SCH) to the serving WTRU. Prior art base stations were generally known for this purpose.

Vanghi does generally teach "a serving WTRU configured to implement transmission power control for another WTRU" where Vanghi's reference to a base station is directed to the serving WTRU and Vanghi's reference to a mobile station is directed to the other WTRU. This essentially is a parallel teaching of the prior art as explained in connection with application Fig.2. Power control for multiple channels was known in the art as taught by Willenegger as well as by Dominique as referenced above.

The serving WTRU defined by Claim 39 requires "a receiver configured to receive UL user data from another WTRU on an UL DCH and at least one UL SCH" and "a processor configured to compute UL DCH target metrics based on the received UL user data on the UL DCH..." An example of the claimed receiver and processor elements are depicted in application Fig. 4; receiver 46 representing the claimed receiver and processor components 34, 36 representing the claimed processor. Such elements are reasonably encompassed by the teachings of the cited prior art.

Claim 39, however, further defines "a shared channel target metric generator configured to output a respective UL SCH target metric derived from each computed UL DCH target metric for use in computing UL channel power adjustments by the other WTRU, for example, as illustrated by element 27 in Fig.4. This element of the claimed serving WTRU is not disclosed by the cited art.

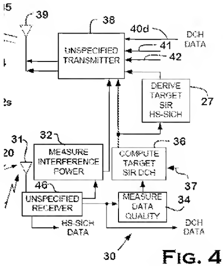

FIG. 4

Of the references cited, only Willenegger and Dominique address power control for multiple channels. Willenegger teaches the use of independent power control loops for each channel stating at page 8, lines 21-24:

> ... As shown in FIG. 3, inner loop 310 operates between the user terminal and base station, and one inner loop is typically maintained for each channel to be independently power controlled.

Dominique discloses establishing power thresholds for respective primary and secondary channels, where the power thresholds for respective primary and secondary channels are initially computed based on <u>respective</u> power level measurements. Dominique does not specifically teach a dedicated channel (DCH) as the primary channel and a shared channel (SCH) as a secondary channel which

is the context of the appealed claims.

In any event, even if the primary channel is a DCH and the secondary channel is a SCH, Dominique does not teach the claimed "shared channel target metric generator configured to output a respective UL SCH target metric derived from each computed UL DCH target metric." In Dominique, the primary channel threshold power metrics P(k), P(k+1) are used after a determination is made that the secondary channel is in a DTX mode, which determination is based on the measured power of the secondary channel. Only then are the primary channel metrics P(k), P(k+1) used to determine the secondary channel metric S(k+1) as per Dominique column 6, line 58 through column 7 line 23:

> Focusing on secondary channel connection 120, **MSC 116 determines whether secondary channel connection 120 is in DTX mode at time instant k+1.** Secondary channel connections 118 and 122 follow the same procedure for determining whether they are in DTX mode. **The power level of communication signals conveyed over all associated secondary channels is obtained. ...**
> ...
> In accordance with the method of the present invention, **MSC 116 then calculates an updated power threshold for secondary channel connections** 118,120 and 122 based on (1) previously established power threshold (i.e., P(k)) for associated primary channel 102; (2) previously established power threshold (i.e., S(k)) for secondary channel 120 and current established power threshold level (i.e., P(k+1)) for associated primary channel 102. In other words, P(k), S(k) and P(k+1) are combined to establish an updated power threshold level, viz., S(k+1, for secondary channel 120. In particular

> S(k+1)=P(k+1)+S(k)-P(k) thereby tending to prevent secondary channel 120 **(currently in DTX mode)** from entering into a deadlock state. ...

However, the primary channel threshold power metrics P(k), P(k+1) are not used used when the secondary channel is not in a DRX condition per Dominique column 7 lines 6-10:

> ... then secondary channel 120 is declared not to be in DTX mode. MSC 116 also establishes the current power threshold level for primary channel 102, i.e., P(k+1), in the same manner as described above for P(k) and S(k).

Accordingly, Dominique does not teach anything equivalent to the claimed "shared channel target metric generator configured to output a respective UL SCH target metric derived <u>from each computed UL DCH target metric</u>," since the primary channel metric P(k) is not used for initially determining the secondary channel metric S(k) either initially or when the secondary channel is determined to be in DTX mode through measuring the secondary channel.

For example, at an initial time "0," primary channel metric P(0) is not used for determining the secondary channel metric S(0). If at time "1," the secondary channel is not in DTX mode, primary channel metric P(1) is not used for determining the secondary channel metric S(1) per Dominique column 7 lines 6-10. If at time "2," the secondary channel is in DTX mode, primary channel metrics

P(1) and P(2) are used for determining the secondary channel metric S(2) per Dominique column 7 lines 18-23. However, primary channel metric P(0) is then never used to determine the secondary channel metric S(k) at any time "k" as would be required for a component the same or equivalent to the claimed "shared channel target metric generator."

Based on the above, it is clear that the claimed "shared channel target metric generator" of independent claim 39 and the corresponding "generating a respective UL SCH target metric derived from each computed UL DCH target metric" of independent claim 42 differentiate the claimed invention over the scope and content of cited prior art.

C. The Non-Obviousness of the Claimed Invention

The claimed invention is not obvious over the cited prior art because the cited art, alone or in combination, does not suggest the novel "shared channel target metric generator" of independent claim 39 or the corresponding "generating a respective UL SCH target metric derived from each computed UL DCH target metric" of independent claim 42.

As explained in the application, applicants recognized that the independent measurement and other processing of a received SCH data signal to determine a

target metric for power control of the transmission of the SCH could be eliminated where there is an associated DCH channel being received. Per the independent claims: "a respective UL SCH target metric [is] derived from each computed UL DCH target metric." This is opposite the teachings of independent power control for each channel as taught by Willenegger.

The use of the claimed "shared channel target metric generator" eliminates the need for the processing components and procedures for measuring the power level of the secondary channel taught by Dominique and using the measured secondary channel power it determine a DTX state and/or the secondary channel power control metric S(k).

Dominique does teach using the primary channel power control metric P(k), P(k+1) for determining the secondary channel power control metric S(k) after measuring the power level of the secondary channel and then determining whether the secondary channel is in a DTX mode. However, there is no suggestion in Dominique to forgo the secondary power measurement and DTX determination processing which the claimed invention makes superfluous. If fact, instead of eliminating processing, Dominique teaches the added DTX determination processing.

The prior art teaches the need (and components) to measure or otherwise process each received data channel in the determination of that channels power control metrics. Even in Dominique where a relationship between primary and secondary channels is sought to be exploited, the measurement of both channels is required.

Fig. 4 illustrates an example of a serving WTRU, namely WTRU 30, that includes the elements specified by independent claim 39. As illustrated, there is no similar SCH channel measuring component for the data path of the SCH data channel (HS SICH DATA). Only the DCH data path (DCH DATA) includes a DCH channel measuring component 34 that produces the measurements used to compute the power control metrics for the DCH. <u>The need for such a SCH measuring component and attendent processing is eliminated by the claimed "shared channel target metric generator" 27 that calculates target metrics for the SCH based on the computed DCH metric</u>.

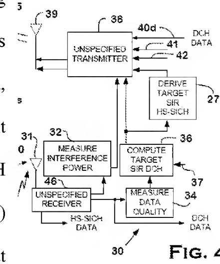

FIG. 4

An obviousness rejection cannot be sustained where the prior art does not suggest the claimed configuration. *Graham v. John Deere Co.*, 383 U.S. 1, 148

U.S.P.Q. 459 (1966); *Ex Parte Katoh et al,* Appeal 20071460, Decided May 29, 2007 (BPAI 2007). Here, there is no suggestion of the claimed "shared channel target metric generator" of independent claim 39 or the corresponding "generating a respective UL SCH target metric derived from each computed UL DCH target metric" of independent claim 42.

Prior art teachings away from the claimed invention are clear indicia of non-obviousness. *KSR International Co v. Teleflex Inc.*, 550 U.S. 398, ___, 82 U.S.P.Q. 2d 1385, 1395 (2007). Here, both applied references that discuss power control for multiple channels, teach measuring components and steps of each power controlled channel. This teaches away from the benefit realized through the claimed invention of the elimination of the measuring components and related processing of the received SCH to determine SCH power control metrics where there is a related received DCH. Accordingly, independent claims 39 and 42, are nonobvious and patentably define over the cited art.

D. Conclusion

For the above reasons, reversal of the rejections of appealed claims under 35 U.S.C. §103(a) as being unpatentable over Willenegger in view of Dominique and further in view Vanghi and allowance are respectfully requested.

Respectfully submitted,

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VIII. Claims Appendix

39. A serving wireless transmit receive unit (WTRU) configured to implement transmission power control for other WTRUs wherein the serving WTRU receives data signals on an uplink dedicated channel (UL DCH) and sporadically receives data signals on an associated uplink shared channel (UL SCH), the serving WTRU comprising:

a receiver configured to receive UL user data from another WTRU on an UL DCH and at least one UL SCH;

a processor configured to compute UL DCH target metrics based on the received UL user data on the UL DCH associated with the UL SCH used by the other WTRU; and

a shared channel target metric generator configured to output a respective UL SCH target metric derived from each computed UL DCH target metric for use in computing UL channel power adjustments by the other WTRU.

40. The WTRU of claim 39 in which the target metrics are target signal to interference ratios (SIRs).

41. The WTRU of claim **40** wherein the SCHs for which SCH target SIRs are generated are High Speed Shared Information Channels (HS-SICHs) which operate in conjunction with High Speed Downlink Shared Channels (HS-DSCHs).

42. The method for implementing transmission power control by a serving wireless transmit receive unit (WTRU) for other WTRUs wherein the serving WTRU receives data signals on an uplink dedicated channel (UL DCH) and sporadically receives data signals on an associated uplink shared channel (US SCH), the method comprising:

receiving UL user data from other WTRUs on UL DCHs and at least one UL SCH;

computing target metrics for UL DCHs based on the reception of signals transmitted by a WTRU on an UL DCH associated with an UL SCH usable by the WTRU; and

generating a respective UL SCH target metric derived from each computed UL DCH target metric for use in computing UL channel power adjustments by the other WTRU.

43. The method of claim 42 wherein the computing and generating of target metrics comprises computing and generating of target signal to interference ratios (SIRs).

44. The method of claim 43 wherein the SCHs for which SCH target SIRs are generated are High Speed Shared Information Channels (HS-SICHs) which operate in conjunction with High Speed Downlink Shared Channels (HS-DSCHs).

IX. Evidence Appendix

None.

X. Related Proceedings Appendix

None.